



Arie Leegwater

On Tipping Points and Christian Scholarship

The use of the phrase “tipping point” has become commonplace. A term introduced in epidemiology is now being used by climate scientists, sometimes with apocalyptic warnings. Tipping point describes a critical point in an evolving situation that leads to a new and irreversible development. In short, it is considered to be a turning point. When we look back at the trajectory of our own lives we can undoubtedly identify some intellectual tipping points.

As I compose this editorial during early April, I look back to March with a certain ache in my heart. I experienced the passing of two mentors, two professors who functioned as tipping points in my own academic development. The first was a cantankerous philosopher, a founder of the field of philosophy of biology, Marjorie Glicksman Grene (b. 1910), lately of Virginia Tech; the second, an able physicist turned historian of science, Martin J. Klein (b. 1924) of Yale University. They shaped my thinking in a variety of ways.

Grene doggedly insisted that philosophy mattered in the generation of scientific knowledge, and that thinkers like Michael Polanyi, J. J. Gibson, and Merleau-Ponty offered insights that legitimately challenged the reigning paradigms of reflection in the sciences. She continually stressed the embodied nature and historicity of human beings: it was Descartes’ disembodied “cogito” that drew her ire.

Klein demonstrated how, in a close analysis of the development of quantum theories, one can detect different scientific styles which enhance our understanding and assessment of the contributions of a particular thinker. As a historian of science, Klein became a leading expert on the origins of the quantum theory and for ten years served as senior editor of the Einstein Papers Project. Klein was nominated to the National Academy of Sciences in 1977, the only historian of science to hold that honor.

Klein had known and intensively studied many of the leading lights of the new physics. His research dealt with the interrelated developments of quantum mechanics and statistical thermodynamics, and usually concentrated on the work of individual physicists, such as the development of Ludwig Boltzmann’s statistical ideas, Josiah Willard Gibbs’ early work in thermodynamics, Paul Ehrenfest’s contributions to the quantum theory, the origins of Erwin Schrödinger’s wave mechanics, and the life and work of Niels Bohr and Albert Einstein. If there is a way of describing Klein’s work in the history of physics one can do no better than appeal to one of his favorite Herbert Butterfield quotes. Butterfield, the English historian, wrote,

The value of history lies in the richness of its recovery of the concrete life of the past. It is a story that cannot be told in dry lines, and

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its meaning cannot be conveyed in a species of geometry. There is not an essence of history that can be got by evaporating the human and the personal factors, the incidental or momentary or local things, and the circumstantial elements, as though at the bottom of the well there was something absolute, some truth independent of time and circumstance ... The thing which is unhistorical is to imagine that we can get the essence apart from the accidents.

When Klein's colleagues presented him with a festschrift entitled *No Truth Except in the Details*, they captured his approach to the history of science. Schrödinger once described his wave mechanical theory as "being stimulated by de Broglie's thesis and by short but infinitely far-seeing remarks by Einstein." Klein is the only person I know who could take these short far-seeing remarks and turn them into a finely tuned forty-three page paper on "Einstein and the Wave-Particle Duality," *The Natural Philosopher* 3 (1964).

And yet, for all my appreciation for the insights and scholarship of Klein and Grene, we differed on fundamental matters. Neither was a Christian believer nor did they desire to become one. For Klein, a variety of ideological influences could not be constitutive of science. For Grene, religion was a nonstarter. What I constantly faced was a nagging question: what might one legitimately learn from them? And still more fundamentally: how do we as Christians continue to have a distinctive voice in scholarship, faithfully working out of a tradition, without becoming insular, satisfied in our own isolation?

It is easy to accede to the idea that Christian scholarship is best characterized as a value-added interpretation of a more or less common set of facts or realities, at best, one of many interpretive slants on an issue. But, in reality, Christian scholarship has a bite to it. It rests on well-grounded beliefs, but also requires engagement with others in interpreting and understanding the common world in which we live. Christian believers will have to discover, to learn, to never stop learning what science and technology are about. We learn with others and from others. Science thrives on an analysis of things and events which we encounter as creational givens.

Which things and events? In principle, all things. And what of science's relation to faith? For symmetry there is no place, nor one for a static hierarchy. We can, I think, speak of a certain priority.

The knowledge of faith—its certainty—appears at first glance to be mysterious. But that is just as true of our knowledge of justice and love. Faith can be expressed in words, in propositions. We confess in faith that our world is created. But that a particular constellation of clouds will arrive tomorrow to give us rain is information, a more or less correct and accurate assessment and description of the world. Science thrives on information, but that the world has been lovingly prepared for us, by a word of God, as a place to be lived in, is accepted by faith. That is certainly a different language, a language of which one never gets enough. ✕

Arie Leegwater, *Editor*
leeg@calvin.edu



In This Issue

There is a certain symmetry to this issue of *PSCF*. *Ad seriatim* it has two history articles, a creation care article, and finally two articles devoted to geological subjects.

In this year of Darwin celebrations, John H. Brooke introduces us to the topic "Charles Darwin on Religion." Edward (Ted) Davis follows with Part 1 of a three-part series on Arthur Compton, prophet of science. Three Calvin College colleagues describe an institutional carbon neutrality project written with pedagogical intent. Carol Hill and Steve Moshier provide a comparative analysis of flood geology and Grand Canyon geology, and finally Davis Young gives us an essay book review of the latest monumental book by Martin Rudwick, the world's premier historian of geology.

Book reviews and letters provide additional food for thought. ✕